WHAT IS CLAIMED IS:

1. A switch mode power supply, comprising:

a source of a periodic input supply voltage;

a filter capacitor;

a power, switching semiconductor coupled to said source and to said capacitor for generating periodic rectified supply current pulse in said semiconductor having a first transition in a first direction and a second transition at an opposite direction at a frequency related to that of said input supply voltage to develop an output supply voltage in said capacitor;

a source of a first switch control signal for conditioning said semiconductor to conduction prior to said first transition in a manner to provide for zero voltage switching in said semiconductor, during said first transition; and

a comparator responsive to a signal indicative of said output supply voltage and to a signal at a reference level for generating a second switch control signal for said semiconductor to produce said second transition of said current pulse that is modulated, in accordance with a difference between said output supply voltage and said reference level signal, said comparator having a positive feedback signal path that provides hysteresis with respect to said output supply voltage.

2. The power supply according to Claim 1, wherein said first transition occurs, when a first difference between an instantaneous level of said input supply voltage and said output supply voltage is reached.

3. The power supply according to Claim 1, wherein said hysteresis prevents said semiconductor from generating multiple current pulses in a given period of said input supply voltage in a manner to maintain the zero voltage switching.

4. The power supply according to Claim 1, wherein said switching semiconductor comprises a series pass transistor.

5. The power supply according to Claim 4, wherein said series pass transistor is coupled in series with a rectifier for preventing said capacitor from discharging via said transistor, outside said rectified supply current pulse.

6. The power supply according to Claim 4, wherein said first transition occurs, when a voltage, developed between a pair of main current conducting terminals of said transistor, changes polarity.

7. The power supply according to Claim 4, wherein said input supply voltage is coupled to a control terminal of said transistor via a signal path that bypasses a main current conducting path in said transistor to generate said first switch control signal at said control terminal of said transistor.

8. The power supply according to Claim 1, further comprising a rectifier for rectifying a mains supply voltage to produce said input supply voltage having a sine-wave rectified waveform.

9. A switch mode power supply, comprising:

a source of a periodic input supply voltage;

a filter capacitor;

a power, switching transistor coupled to said source and to said capacitor for generating periodic rectified supply current pulse in said transistor having a first transition in a first direction and a second transition at an opposite direction at a frequency related to that of said input supply voltage to develop an output supply voltage in said capacitor;

said input supply voltage being coupled to a control terminal of said transistor via a signal path that bypasses a main current conducting path in said transistor to generate a first switch control signal at said control terminal of said transistor for conditioning said transistor to conduction prior to said first transition in a manner to provide for zero voltage switching in said transistor, during said first transition; and

a comparator responsive to a signal indicative of said output supply voltage and to a signal at a reference level for generating a second switch control signal for said semiconductor to produce said second transition of said current pulse that is modulated, in accordance with a difference between said output supply voltage and said reference level signal.

10. The power supply according to Claim 9, wherein said transistor comprises a series pass transistor.

11. The power supply according to Claim 10, wherein said series pass transistor is coupled in series with a rectifier for preventing said capacitor from discharging via said transistor, outside said rectified supply current pulse.

12. The power supply according to Claim 9, wherein said signal path that bypasses said main current conducting path includes said comparator.

13. The power supply according to Claim 9, wherein said first transition occurs, when a voltage developed between a pair of main current conducting terminals of said transistor changes polarity.